Appl. No. 10/595,875
Response to Final Action of December 28, 2010

REMARKS

Applicant submits that this Amendment After Final Rejection places this application in condition for allowance by amending claims in manners that are believed to render all pending claims allowable over the cited art and/or at least place this application in better form for appeal. This Amendment is necessary to clarify certain claim limitations and was not earlier presented because Applicant believed that the prior response(s) placed this application in condition for allowance, for at least the reasons discussed in those responses. Accordingly, entry of the present Amendment, as an earnest attempt to advance prosecution and/or to reduce the number of issues, is requested under 37 C.F.R. §1.116.

In the event that the Office declines to enter the present Amendment, and (i) any portion of the present Amendment would place some of the claims in better form for appeal if a separate paper were filed containing only such amendments or (ii) any proposed amendment to any claim would render that claim allowable, Applicant respectfully requests that the Office inform Applicant of the same pursuant to MPEP §714.13.

By this amendment, claim 2 has been canceled (claims 4 and 10 were previously canceled). Claims 1, 9 and 11 have been amended. Claim 11 has been amended to now depend from claim 1, since claim 2 has been canceled herein. Claims 1, 3, 5-9 and 11-13 remain in the application. This application has been carefully considered in connection with the Examiner's Action. Reconsideration, withdrawal of the final action, and allowance of the application, is respectfully requested.

Appl. No. 10/595,875
Response to Final Action of December 28, 2010

Rejection under 35 U.S.C. §103

Claims 1-3 and 5-9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kamada et al. (U.S. Patent 5,444,791, hereinafter "**Kamada**") in view of in view of Toriu et al. (U.S. Patent 6,184,892, hereinafter "**Toriu**"). With respect to claim 2, the same has been canceled herein, thus rendering the rejection thereof now moot. With respect to claim 1, Applicant respectfully traverses this rejection on the grounds that the **Kamada** and **Toriu** references are defective in establishing a prima facie case of obviousness.

Independent claim 1, as now presented, more clearly recites, *inter alia*, the *specific feature limitations* of "*b) specifying randomly* a spatial reference position (Q_0) ... wherein the *spatial reference position* (Q_0) of a corresponding at least one feature point (Q) is *randomly specified* from *two* projection photographs (i) that *originate* from a *similar state* of the body volume (ii) *but* from different *directions*; *c) calculating* transformations (Σ_n, σ_n) ... which *link* positions of the *feature points* for *different states* of the *body volume*, wherein a *projection* of a *transformed randomly specified spatial reference position* (Q_0) coincides with a respective *transformed image* of a corresponding at least one *feature point* (Q) for the *different states* of the *body volume*; *and d) reconstructing* the object three-dimensionally ... wherein *reconstructing* includes using *all transformed* projection photographs from the *different states* of the *body volume*" (emphasis added). Support for the amendments to claim 1 (as well as amendments to claims 9) can be found in the specification at least in the Abstract, on page 2, lines 5-8 and 21-34; page 3, lines 4-6, 18-20 and 31-34; page 4, lines 18-20 and 30-34; page 5, lines 1-2; page 7, lines 8-9, 14-17 and 30-34; page 8, lines 1-7; page 9, lines 7-8; and FIGs. 1-3.

The embodiment of claim 1 (as well as claim 9) advantageously provides "for localizing an object in a vascular system of a patient, wherein the object and/or the

surrounding body volume can be subject to a *cyclical* or *non-cyclical* movement"
(*emphasis added*, see specification, page 1, lines 24-26). In addition, the embodiment
of claim 1 (as well as claim 9) "has the advantage that the object, or region of interest in
the case of the object, can be reconstructed using all the projection photographs from
the memory. This succeeds since changes in the position and shape of the moving
object can be compensated with the aid of the transformations. It is of particular
advantage in this connection that the movement of the object can be of practically any
kind" (*emphasis added*, see specification, page 3, lines 10-14). Furthermore, "[t]hrough
the calculation and application of all two-dimensional transformations $\sigma_1, \sigma_2, ... \sigma_n, ... \sigma_N$
to the projection photographs $A_1, A_2, ... A_n, ... A_N$, as a result it is ensured that *all*
projection photographs are compensated on a *fictitious, static spatial position* Q_0 of the
feature point. This makes it possible for the body volume, or an object located within it,
subsequently to be reconstructed three-dimensionally, using *all* the (*transformed*)
projection photographs" (*emphasis* added, see specification, page 9, lines 3-8).

Applicant submits that <u>neither</u> **Kamada** nor **Toriu** discloses at least the
aforementioned specific feature limitations of independent claim 1. In particular, it is
submitted that the secondary citation to **Toriu** does not disclose remedy the conceded
deficiency in the primary citation to **Kamada**. Accordingly, without conceding the
propriety of the asserted combination, the asserted combination of **Kamada** and **Toriu**
is likewise deficient, even in view of the knowledge of one of ordinary skill in the art.

The Office Action concedes that **Kamada** does not disclose "*feature points* are
selected randomly" (emphasis added) (See Office Action, page 3, line 9). Nonetheless,
the Office Action rejects independent claim 1, contending that **Toriu** provides this
necessary disclosure (See Office Action, page 3, lines 10-14). It is noted that the Office
Action indicates that "Toriu discloses this feature in col. 28, lines 40-66. It would have
been obvioius to one of ordinary skill in the art to include in Kamada the random feature

<div align="center">Page 8 of 13</div>

Appl. No. 10/595,875
Response to Final Action of December 28, 2010

point selection as taught by Toriu. The reason is to make the system more robust by allowing it to choose any feature position as its starting point." (See Office Action, page 3, lines 10-14). This contention is respectfully traversed.

In addition to the conceded deficiency in **Kamada**, it is further submitted that **Kamada** does not disclose the *specific feature limitations* of claim 1 as now more clearly presented which include "*b) specifying randomly* a spatial reference position (Q_0) ... wherein the *spatial reference position* (Q_0) of a corresponding at least one feature point (Q) is *randomly specified* from *two* projection photographs (i) that *originate* from a *similar state* of the body volume (ii) *but* from different *directions*; c) *calculating* transformations (Σ_n, σ_n) ... which *link* positions of the *feature points* for *different states* of the *body volume*, wherein a *projection* of a *transformed randomly specified spatial reference position* (Q_0) coincides with a respective *transformed image* of a corresponding at least one *feature point* (Q) for the *different states* of the *body volume*; and *d) reconstructing* the object three-dimensionally ... wherein *reconstructing* includes using *all transformed* projection photographs from the *different states* of the *body volume*" (emphasis added). **Kamada** discloses, at column 19, lines 17-39, the following:

> "In FIG. 12, the shape/movement recognition unit 27
> comprises a known data input unit 31 for receiving
> known data about the movement of an object e.g. from
> a sensor, a feature point normalization position unit 32
> for obtaining the relative positions of other feature
> points when one [1] of plural feature points moves to the
> origin of a three-dimensional coordinate space, i.e. the
> normalized positions, a shape/movement determination
> unit 33 for determining a recognition enablement or a
> recognition disablement of the movement of an object,
> a movement calculation unit 34 for calculating the angle
> of rotation around the axis of rotation of the object by
> using an output from the feature point normalization
> unit 32, a shape calculation unit 35 for obtaining un-

Page 9 of 13

Appl. No. 10/595,875
Response to Final Action of December 28, 2010

> known position data of feature points otther than the
> feature point on the origin, and a feature point position
> reconstruction unit 36 for outputting the movement of
> the object the and the positions of feature points in the
> three-dimensional coordinate space respectively to the
> object movement storage unit 28 and the feature point
> position storage unit 29, by using outputs from the
> movement calculation unit 34 and the feature point
> position normalization unit 32."

However, the disclosure in **Kamada**, indicated herein above, of the shape/movement recognition unit, data input unit, feature point normalization position unit, shape/movement calculation determination unit, movement calculation unit, shape calculation unit, and the feature point position reconstruction unit which outputs the movement of the object and the positions of feature points in the three-dimensional coordinate space, respectively, to the object movement storage unit and the position storage unit, by using outputs from the movement calculation unit and the feature point position normalization unit (as well as FIGs. 10 and 12 of Kamada) cannot reasonably be interpreted to disclose or suggest the *specific feature limitations* of that which is now presented in claim 1, as amended.

Furthermore, **Toriu** relates to an image production processing apparatus and structural data generating apparatus for generating structural data used in the image production processing apparatus. "The image production processing apparatus includes an *input visual point image storage* portion for storing *body images* obtained by taking pictures of a body from a plurality of visual points so that each of the body images corresponds to one of the plurality of visual points, an *input feature point storage* portion for storing positions of *feature points*, corresponding to each other, on the body images stored in the input visual point image storage portion, an *input visual point storage* portion for storing *positions* of the *visual points* from which the pictures of the body are

Page 10 of 13

Appl. No. 10/595,875
Response to Final Action of December 28, 2010

taken to obtain the body images stored in the input visual point image storage portion, a *visual point selecting* portion for selecting a *predetermined number* of visual points from among the visual points stored in the input visual point storage portion *when* a *visual point* is *specified, and* an *image producing* portion for producing an body image from the specified visual point from the body images from the selected visual points, based on relationships between feature points on the body images from the selected visual points which feature points are obtained from the input feature point storage portion and relationships between the selected visual points and the specified visual point."

(*emphasis added*, see Toriu, Abstract). In addition, the **Toriu** reference discloses, at col. 28, lines 42-60, the following:

> "Supposing that there are N visual points from a visual
> point 1 to a visual point N, two visual points are selected
> from among the N visual points at random. For example,
> three visual points: visual points A, Band C are selected. A
> feature point candidate is selected, at random, from among
> the feature point candidates extracted from the body image
> from the visual point A. Coordinates of the extracted feature
> point candidate is represented by (xa, ya). A feature point
> candidate is selected, at random, from among the feature
> point candidates extracted from the body image from the
> visual point B in the same manner as in the case of the visual
> pint A. Coordinates of the extracted feature point candidate
> is represented by (xb, yb). A unit vector in the x-axis
> direction on an image plane defined when a picture of the
> body is taken from the visual point A is represented by ia,
> and a unit vector in the y-axis direction on the image plane
> is represented by ja. In the case of the visual point B, unit
> vectors ib and jb are defined in the same manner as in the
> case of the visual point A."

However, the disclosure in **Toriu**, indicated herein above, of selecting two visual points at *random* cannot reasonably be interpreted to disclose or suggest the *specific feature*

Page 11 of 13

Appl. No. 10/595,875
Response to Final Action of December 28, 2010

limitations of that which is now presented in claim 1, as amended. More particularly the disclosure in **Toriu** cannot reasonably be interpreted to disclose or suggest "*specifying randomly* a spatial reference position (Q_0) ... wherein the *spatial reference position* (Q_0) of a corresponding at least one feature point (Q) is *randomly specified* from *two* projection photographs (i) that *originate* from a *similar state* of the body volume (ii) *but* from *different directions*." Thus, **Toriu** does not provide a disclosure that remedies the aforementioned, conceded deficiency in the citation to **Kamada**. Thus, a *prima facie* case of obviousness has clearly not been met, and the rejection under 35 U.S.C. §103 should be withdrawn.

Accordingly, claim 1 is allowable and an early formal notice thereof is requested. The 35 U.S.C. §103(a) rejection thereof has now been overcome. Claims 2-3 and 5-8 depend from and further limit allowable independent claim 1 and therefore are allowable as well. Withdrawal of the rejection is respectfully requested.

Claim 9 has been amended in a manner similar to the amendments to claim 1. Accordingly, for similar reasons as stated with respect to overcoming the rejection of claim 1, claim 9 is believed allowable and an early formal notice thereof is requested. The 35 U.S.C. §103(a) rejection thereof has now been overcome. Withdrawal of the rejection is respectfully requested.

Claims 11-13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Kamada et al. (U.S. Patent 5,444,791, hereinafter "**Kamada**") in view of in view of Toriu et al. (U.S. Patent 6,184,892, hereinafter "Toriu") and further in view of Weeden (U.S. Patent 4,901,019, hereinafter "**Weeden**"). Applicant respectfully traverses this rejection for the following reason. Claims 11-13 depend from and further limit allowable independent claim 1 and therefore are allowable as well. Withdrawal of the rejection is respectfully requested.

Page 12 of 13

Appl. No. 10/595,875   Docket No.: PHDE030394US1
Response to Final Action of December 28, 2010   Customer No. 24737

Conclusion

Except as indicated herein, the claims were not amended in order to address issues of patentability and Applicants respectfully reserve all rights they may have under the Doctrine of Equivalents. Applicants furthermore reserve their right to reintroduce subject matter deleted herein at a later time during the prosecution of this application or a continuation application. In addition, the Office Action contains a number of statements characterizing the claims, the Specification, and the prior art. Regardless of whether such statements are addressed by Applicant, Applicant refuses to subscribe to any of these statements, unless expressly indicated by Applicant.

The matters identified in the Office Action of December 28, 2010 are now believed resolved. Accordingly, the application is believed to be in proper condition for allowance. The amendments herein are fully supported by the original specification and drawings; therefore, no new matter is introduced. Withdrawal of the final action and issuance of an early formal notice of allowance of claims 1, 3, 5-9 and 11-13 is requested.

Respectfully submitted,

By: /Michael J. Balconi-Lamica/

Michael J. Balconi-Lamica
Registration No. 34,291
for Charles E. Kosinski, Reg. No. 39,254

Dated:_____March 24, 2011____

Mail all correspondence to:
Charles E. Kosinski, Esq.
Philips Intellectual Property & Standards
P.O. Box 3001
Briarcliff Manor, New York 10510-8001, USA
Telephone: (724) 387-3746
email: charles.kosinski@philips.com
Facsimile: 914-332-0615

a-32658.499